

JUMO



Heating thermostat  
Series AMHs-1-80

B 60.3045.0  
Operating Instructions

11.06/00367556



# Typographical conventions

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## Warning signs



The signs for **Danger** and **Warning** are used in this manual under the following conditions:

### **Danger**

This sign is used when there may be **danger to personnel** if the instructions are not followed accurately or disregarded.



### **Warning**

This sign is used when there may be **damage to equipment or data** if the instructions are not followed accurately or disregarded.

## Note signs



### **Note**

This symbol is used if your attention is drawn to a **specific remark**.



### **Action**

This sign refers to an action to be performed.

The individual steps are indicated by this asterisk, e. g.

**\* open housing.**

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Please read these Operating Instructions before starting up the instrument. Keep the manual in a place which is at all times accessible to all users. Please assist us to improve this manual where necessary. Your suggestions will be most welcome.

Phone    within Germany    (0661) 6003-716  
             from abroad        (++49) 661 6003-0  
Fax       within Germany    (0661) 6003-504  
             from abroad        (++49) 661 6003-607



If any difficulties should arise during start-up, you are asked not to carry out any manipulations on the instrument which are not permitted. You could endanger your rights under the warranty! Please contact your supplier or the main factory.

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## 2 Description

**Application**                      Series AMHs-1-80 heating thermostats are predominantly used in heating technology as control and monitoring devices. The instrument has two separate measuring and switching systems.

**Arrangement to  
DIN 3440 as**                      TR    = temperature controller  
   STB   = safety temperature limiter

Heating thermostats of the AMH series conform to VDE 0631

### 2.1 Type designation

AMH . . . . .	heating thermostat as surface-mounting thermostat
s-	attached to case with pocket
- 1	temperature controller (TR) with changeover contact switching point adjusted from outside
- 80	safety temperature limiter (STB), fail-safe, with n. c. (break) contact and lock-out, switching point fixed at factory
/U	safety temperature limiter (STB) with changeover contact, otherwise as -80.

**2.2 Operation**                      The thermostat operates on the principle of fluid expansion. If the temperature changes in a liquid-filled sensing system, then the volume changes. The resulting movement of the diaphragm acts through a mechanism to operate a microswitch.

Only the temperature probe is used to sense the temperature.

# Description

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<b>Switching function TR</b>	When the temperature rises and the preset setpoint is reached, the controller switches the contact 4-5 to 4-3. After cooling down by the amount of the switching differential, the controller restores contact 4-5 (or according to Section 3.4 for Type AMHs-1-80/U).
<b>Switching function STB</b>	When the temperature rises and reaches the switch-off temperature, the STB opens the contact 1-2 and remains mechanically locked out in this position. After the temperature has dropped by about 10°C, the STB can be reset manually by pressing a push-button.
<b>Self-monitoring facility</b>	<p>If the measuring system is damaged, the fail-safe thermostat (STB) with enhanced safety to DIN 3440 opens the circuit and remains mechanically locked out in this position.</p> <p>With temperatures below -10°C, the same circuit opens but closes again automatically when the temperature rises.</p>

## 2.3 Technical description

<b>Case</b>	Material: polycarbonate base slate grey, RAL 7015 cover flint grey, RAL 7032
<b>Protection</b>	EN 60 529-IP 40 Suitable for use in environments with the usual (normal) pollution.

## 2.4 Technical data

Max. current  
rating

Type	between the terminals	Rating
<b>AMHs-1-80</b>	1-5, 1-3	10(2) A, 230 V AC p. f. = 1 (0.6) 0.25 A, 230 V DC
<b>AMHs-1-80/U</b>	3-4, 3-6	10(2) A, 230 V AC p.f. = 1 (0.6) 0.25 A, 230 V DC
	3-2	2 (0.4) A, 230 V AC p.f. = 1 (0.6) 0.25 A 230 V DC
<b>AMHs-1-80/au</b>	1-5, 1-3	0.1 A 24 V AC/DC

Required fuse      see current rating

Differential      TR    ~ 6°C  
                         STB    —

Switching point  
accuracy      (in °C at + 22°C)  
**TR**  
in upper third of scale ± 3°C  
at start of scale ±5°C  
**STB**  
+ 0°C/ - 5°C

Permitted  
ambient tempera-  
ture at thermostat  
head      in operation  
max.      +80° C  
min.      -40° C

Permitted  
ambient tempera-  
ture at tempera-  
ture probe      in operation  
max.      +140° C

# Description

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**Permitted storage temperature** thermostat head, capillary, temperature probe  
max. +50° C  
min. -50° C

**Operating medium** water (steam)

**Time constant** in water 45 sec max.

**Action** to EN 60 730-1  
*TR*  
Type 2BL = automatic action with micro-disconnection in operation; no auxiliary supply required  
*STB*  
Type 2BK = automatic action with micro-disconnection in operation, with break protection

**Operating position** unrestricted

**Mean ambient temperature error** Switching point displacement of 0.3 °C per °C on deviation of ambient temperature at thermostat head from +22° C calibration temperature.



**Note:**

At present there is no restrictive statement from the health authorities concerning any danger to health over short periods and at low concentrations, e. g. after fracture of the measuring system.

Physical and toxicological properties of the expansion media which may leak in the event of a system fracture							
Range with top end of scale	Dangerous reactions	Fire and explosion hazard		Water contamination	Toxicological data		
		Ignition temperature	Explosion limit		irritant	danger to health	toxic
+200° C and below	–	+355° C	0.6 - 8 % v/v	X	X	X	–



## 2.5 Probe mountings and pockets

Permitted external pressure loading      *Pocket UH*  
16 bar, 110° C

### *Pocket U*

Material of tube and nipple: brass (CuZn)

Tube diameter	100	150	° C
15 x 0.75 mm	27	26	bar



### Note:

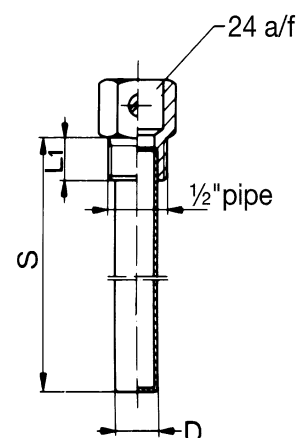
To ensure the overall accuracy, the thermostats must only be used in conjunction with the pockets supplied by the factory.

Fitting several probes into a common pocket is permitted only with 2 or 3 plain probes of 6 mm dia. and pockets of 15 x 0.75 mm.

When fitting 2 probes into a common pocket, the factory-supplied spring clip must be fitted in the pocket.

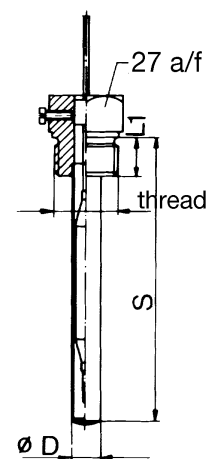
### Pocket UH

Screw-in pocket with fixing screw, for sealing with hemp (no sealing shoulder) for temperatures up to +110° C



### Pocket U

Screw-in pocket with fixing screw. (Clip for securing bulb supplied with Code f).  
With screw-in spigot Form A to DIN 3852/2.



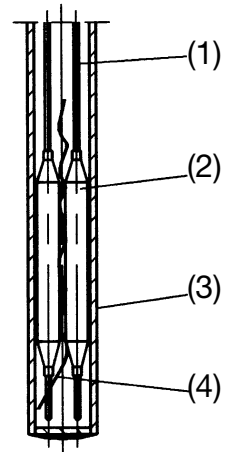
## 3 Installation

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### 3.1 Temperature probe with pocket

The temperature is sensed with the aid of the temperature probe. The probe must be immersed in the medium for its entire length, otherwise there will be appreciable deviations from the switching point.

- (1) capillary
- (2) temperature probe
- (3) pocket
- (4) pressure clip



### 3.2 Securing the thermostat case

With Code s (rigid stem)

The boss of the case is secured in the enlarged open end of the pocket with a fixing screw.

### 3.3 Electrical connection



#### Warning:

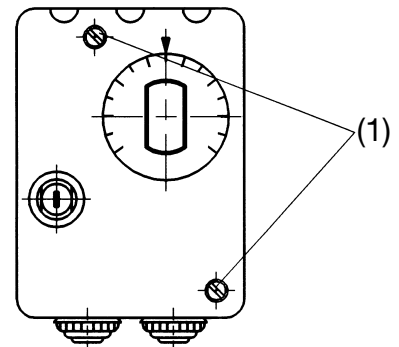
The electrical connection must only be made by a qualified electrician!

Connection suitable for fixed wiring.

Cable entry without fixed tension relief.

#### Opening the case

Unscrew the two screws (1) on the case top and remove the top.



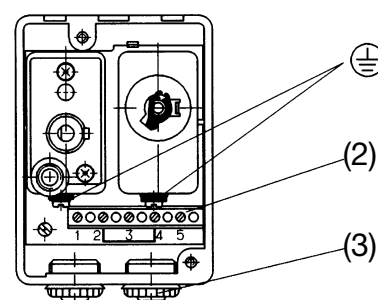
## Making the connection

Pass the cable through the Pg cable gland (3) and connect it to the terminals (2) and the protective earth (PE).

\* Close the case top.

## Cable entry

Two M16 x 1.5 clamping glands as standard.



## Connection

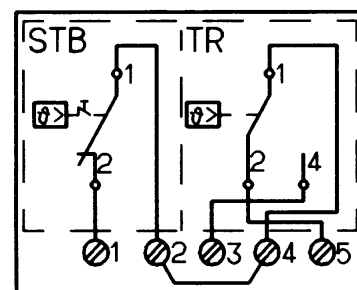
screw terminals; up to 2.5 mm conductor cross-section

according to EN 60 730 T1/2.10;

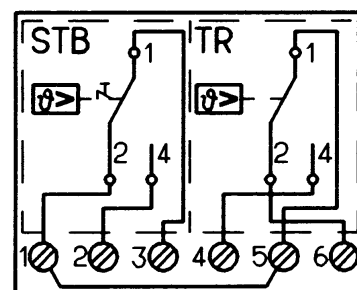
Connection: the cable can be fitted or replaced without any special tools, or any particular preparation, using standardised cables (attachment Type X).

## 3.4 Connection diagrams

AMHs-1-80



AMHs-1-80/U

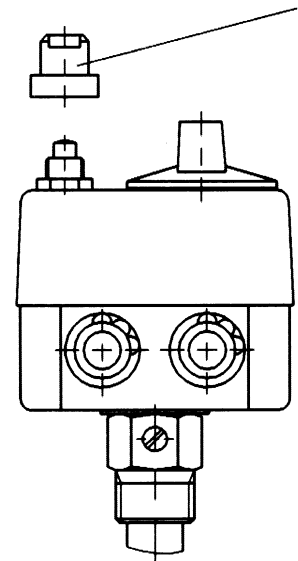


## 4 Resetting the safety limiter STB

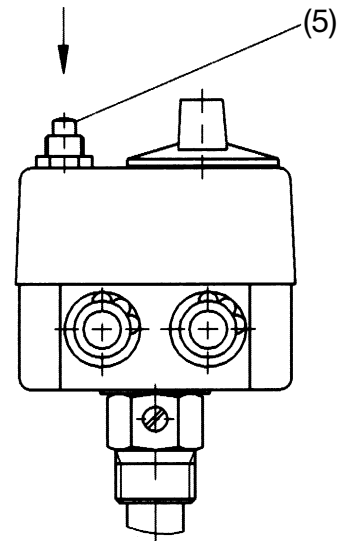
(4)

After the temperature has dropped by approx. 10°C below the set limit (safe temperature limit), the snap-action switch can be reset.

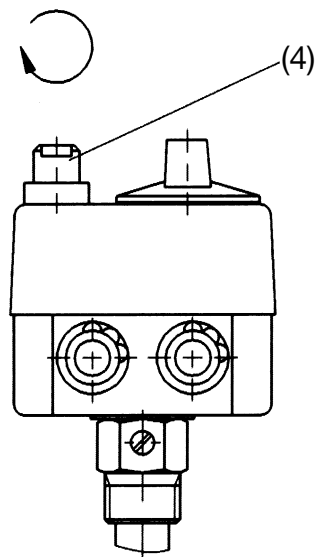
Remove the cap nut (4).



Push down the reset button (5) until the switch is reset.

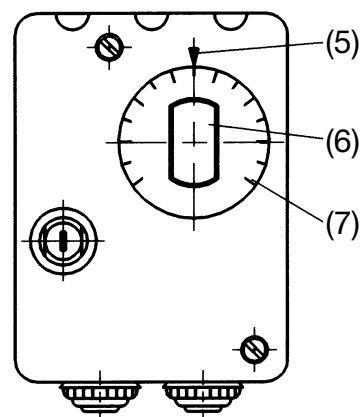


Screw the cap (4) back into position.

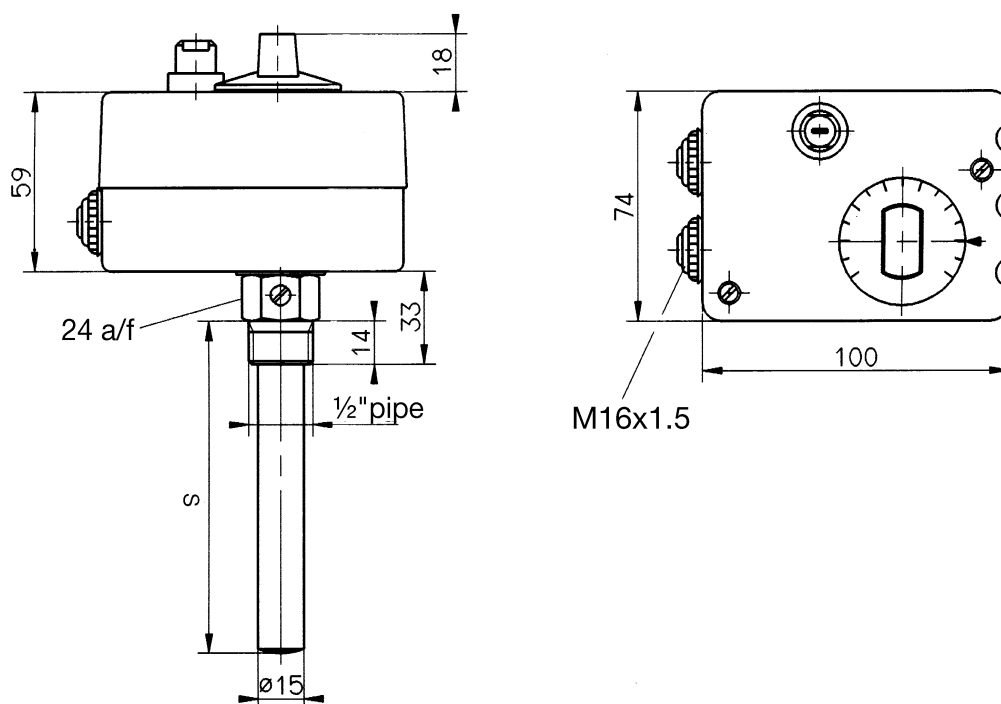


## 5 Setpoint adjustment

- (5) setpoint pointer
- (6) setpoint spindle with temperature scale
- (7) scale graduation



## 6 Dimensions



## 7 Maintenance

The surface-mounting thermostat Type AMHs-1-80 requires no maintenance. In the event of a fault, the staff in our technical offices and subsidiaries are always available to provide information and servicing facilities.

## EU Konformitätserklärung

EU Declaration of Conformity / Déclaration CE de conformité

<b>Dokument-Nr.</b> <i>Document No. / Document n°</i>	CE 211	
<b>Hersteller</b> <i>Manufacturer / Etabli par</i>	JUMO GmbH & Co. KG	
<b>Anschrift</b> <i>Address / Adresse</i>	Moltkestr. 13 - 31 36039 Fulda	
<b>Produkt</b> <i>Product / Produit</i>	<b>Beschreibung</b> Typ/ Serie Typenblatt-Nr.	<b>Aufbauthermostat</b> AMH-1-80; AMH-2-80 60.3045

**Wir erklären in alleiniger Verantwortung, dass das bezeichnete Produkt die Schutzanforderungen der Europäischen Richtlinien erfüllt.**

*We hereby declare in sole responsibility that the designated product fulfills the safety requirements of the European directives.  
Nous déclarons sous notre seule responsabilité que le produit remplit les directives européennes.*

**Richtlinie**  
*Directive / Directive*

Datum der Erstanbringung des  
CE-Zeichens auf dem Produkt  
*Date of first application of the CE mark to the product  
Date de 1ère application du sigle CE sur le produit*

89/336/EWG	[EMV-Richtlinie]	05.1996
73/23/EWG	[Niederspannungs-Richtlinie]	05.1996
97/23/EG	[Druckgeräte-Richtlinie, Modul B+D]	Kategorie IV 11.2002

**Angewendete Normen**  
*Standards applied / Normes appliquées*

EN 61 326	Ausgabe: 05.2001
EN 60 730-1	Ausgabe: 03.2002
VDE 0631	Ausgabe: 12.1983
DIN 3440	Ausgabe: 07.1984
AD 2000 Merkblätter	Ausgabe: 10.2000

**Anerkannte Qualitätssicherungssysteme der Produktion**  
*Recognized quality assurance systems used in production / Organisme notifié agréé*

nach EU-Richtlinie 94/9/EG / EU Directive 94/9/EC / Directive européenne 94/9/CE  
to / suivant TÜV Hannover, Am TÜV 1, D 30519 Hannover, Germany  
Kennnummer 0032, Mitteilungsnummer TÜV 99 ATEX 1454 Q.  
*Identification No. 0032, Notification No. TÜV 99 ATEX 1454 Q / N° d'identification 0032, N° de signification TÜV 99 ATEX 1454 Q*

nach EU-Richtlinie 97/23/EG Modul D / EU Directive 97/23/EC Module D / Directive européenne 97/23/CE module D  
to / suivant TÜV Industrie Service GmbH, D 68167 Mannheim, Germany  
Kennnummer 0036, Zertifikat-Nr. DGR-0036-QS-179-02  
*Identification No. 0036, Certificate No. DGR-0036-QS-179-02 / N° d'identification 0036, N° de certificat DGR-0036-QS-179-02*

**Aussteller:**  
*Issued by: / Etabli par:*

Firma / Company / Société  
JUMO GmbH & Co. KG, Fulda

**Ort, Datum:**  
*Place, date: / Lieu, date:*

Fulda, 2006-06-22

**Rechtsverbindliche Unterschrift**  
*Legally binding signature  
Signature juridiquement valable*

Geschäftsbereichsleitung Verkauf und Produktion  
Head of Division Sales and Production  
Direction du département Ventes et Production

ppa. Wolfgang Vogl





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